

Shining leaf chafers (Coleoptera, Scarabaeidae, Rutelinae) of Jammu and Kashmir, India

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Abstract

In the present communication, a total of 17 species belonging to 7 genera of the subfamily Rutelinae (Insecta: Coleoptera: Scarabaeidae) are documented from the union territory of Jammu & Kashmir (India). We examined the specimens from the recent surveys of Jammu & Kashmir, and the specimens present in the collections of the Zoological Survey of India, Kolkata. The genus *Adoretus* Dejean, and *Popillia* Serville are known by maximum number of species (4 species each), followed by *Anomala* Samouelle (3 species), *Callistethus* Blanchard (2 species), and *Mimela* Kirby (2 species), *Rhinyptia* Burmeister and *Tropiorhynchus* Blanchard (1 species each).

Keywords: Distribution, Himalayas, Pest, Scarabs, Species.

Introduction

Shining leaf chafers (Coleoptera, Scarabaeidae, Rutelinae) includes over 4,617 species worldwide belonging to 254 genera (Schoolmeesters, 2023). These beetles are phytophagous and comprise commercially significant chafers that act as serious pests feeding on foliage, fruit, and flowers (Sawada, 1991; Jackson, 2006; Valois *et al.*, 2019). Some adults can also act as pollinators for certain plant species (Kirmse and Ratcliffe, 2019) Larvae are saprophagous, help in breakdown of dead organic matter in forests and contribute to the nutrient cycling (Hardy 1991; Morón *et al.*, 1997). Jammu and Kashmir lies in the Himalayan Biogeographic Zone and lacks the baseline data on the diversity of subfamily Rutelinae. There has been a lack of study on diversity of this group from India. Studies on the diversity of shining leaf chafers the Jammu and Kashmir have not resulted into more data. Hence, there is a considerable lack of taxonomic literature on these beetles except for some monumental work by Arrow (1917), who documented eight species followed by Bashir *et al* (2017) who reported only one species of Rutelinae from

Jammu and Kashmir, union territory of India. Therefore, this article aims to study and report the materials collected in the recent surveys and the specimens present in the Coleoptera Section of the Zoological Survey of India, Kolkata in order to provide an account of the Rutelinae from this union territory.

Material and Methods

Study Area

Jammu and Kashmir is located in the western part of the Indian Himalayan region (Rodger, 1988). It lies between latitude 32.26' to 34.78'N and longitude 73.16' to 76.76'E (Figure1) and covers an area of 42,241 km². It is centered on the plains around Jammu to the south and the Vale of Kashmir to the north, from west to east, consists of the plains, the foothills, the Pir Panjal Range, the Kashmir Valley and the Great Himalayan Zone with a total forest area of 8,128 km² (Singh and Bedi, 2017) and is known for its rich biodiversity. Samples were collected from various areas of Ramban, Anantnag, Kulgam and Pulwama.

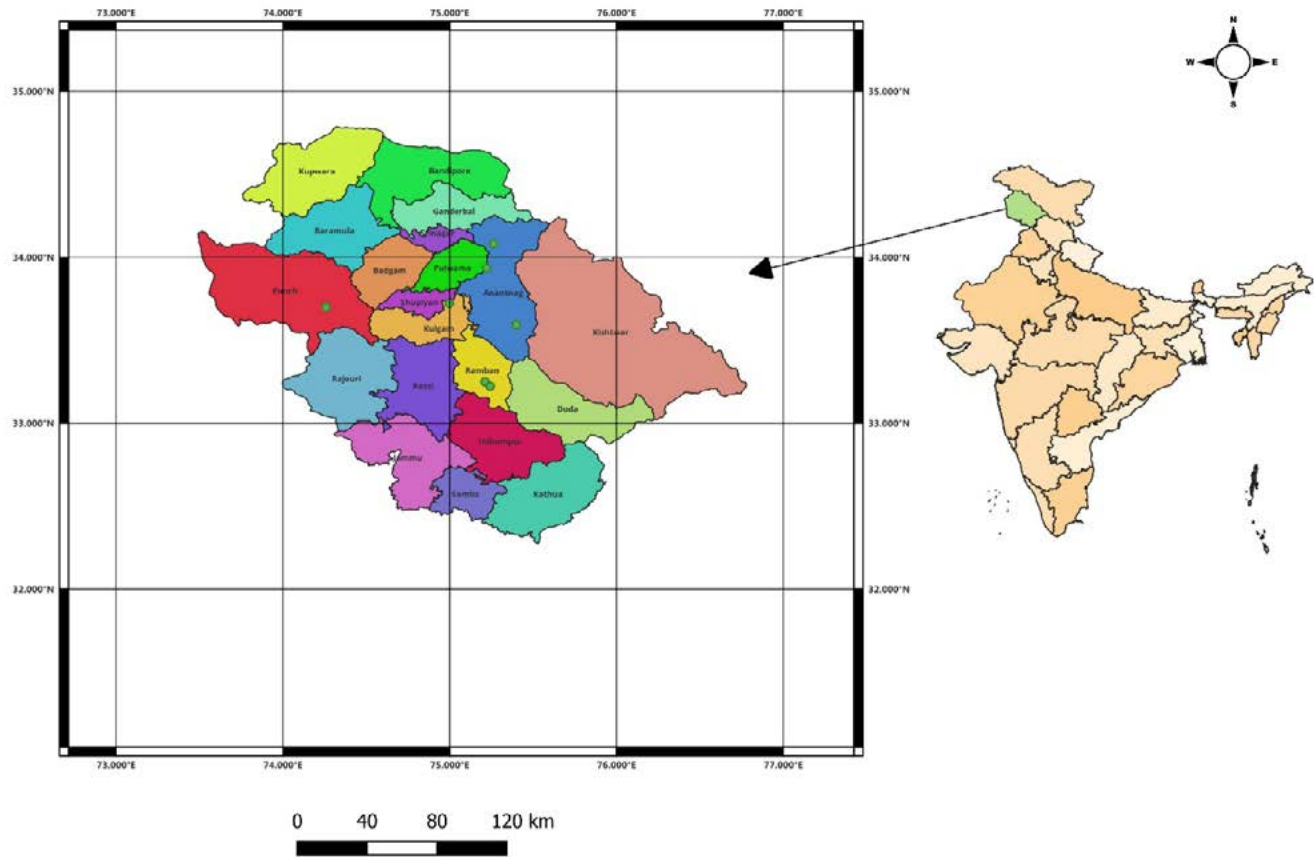


Figure 1. Map of Jammu & Kashmir showing collection localities.

Collection and Preservation

Samples for the study were collected from July to August 2022 from various locations in Jammu and Kashmir using light trapping methods. After collection, the samples were killed in a jar with benzene vapours. The samples were then pinned and dry preserved. The collected samples were analysed and examined under the Leica EZ4 HD microscope. In addition, the specimens from the Coleoptera section of the Zoological Survey of India were also studied. Species level identification was performed using keys and descriptions in Arrow (1917) and compared to reference collections held at the Zoological Survey of India, Kolkata. The structure of aedeagus was also taken into consideration for species-level identification.

Results and Discussions

A total of 17 species belonging to 7 genera and 2 tribes (Adoretini and Anomalini) of subfamily Rutelinae are reported in this study from Jammu & Kashmir (Table 1). The genera *Adoretus* Dejean, 1833 and *Popillia* Serville, are represented by maximum most number of species (4 species each), followed by *Anomala* Samouelle (3 species), *Callistethus* Blanchard (2 species), and *Mimela* Kirby (2 species), *Rhinyptia* Burmeister and *Tropiorhynchus* Blanchard (1 species each). The species are documented based on the pre-existing information, recent collection, and the collection present at Zoological Survey of India, Kolkata.

Table 1. Checklist of Shining leaf chafers (Rutelinae: Scarabaeidae: Coleoptera) from Jammu and Kashmir, India

S. N.	Name of the species	Material examined	Distribution in India.	References
Subfamily Rutelinae Macleay, 1819				
Tribe Adoretini Burmeister, 1844				
Subtribe: Adoretina Burmeister, 1844				
Genus Adoretus Dejean, 1833				
1	<i>Adoretus simplex</i> Sharp, 1878	India: Jammu and Kashmir Ramban, Rampur, 33.2486501N, 75.2107535E, 13.vii.2022, (3♂), leg. Irtiza Wani, India: J&K Kulgam, Qaimoh, Yamrach, 33.728864N, 74.989902E, 17.vii.2022, (5♂), leg. Irtiza Wani, India: Jammu and Kashmir Anantnag, Kokernag, 33.600302N, 75.390609E, 19.vii. 2022, (3♀), leg. Irtiza Wani.	IN: HP, JK E: NP	Arrow (1917) Schoolmeesters (2023).
2	<i>Adoretus (Adoretus) duvauceli</i> Blanchard, 1851	India: Jammu and Kashmir, Udampur, 15.ix.1964, leg. Raj Tilak.	IN: CH, HR, MP, UP, WB, HP, JK, SK, UK	Arrow (1917) and Schoolmeesters (2023).
3	<i>Adoretus (Adoretus) versutus</i> Harold, 1869	India: Jammu and Kashmir, Anantnag, Pahalgam, Aru Valley, 7919.9ft, 34.0859336N, 75.2638140E, 20.vii.2022, (2♀), leg. Irtiza Wani, India: Jammu and Kashmir Pulwama, Tral, 33.9392190N, 75.1324990E, 17.vii.2022, (1♂), leg. Irtiza Wani.	IN: JK, AN, AP, BH, HR, KL, MP, UP, WB, UK E: ID, MY, MD, FJ	Arrow (1917) Bashir <i>et al.</i> (2017)
4	<i>Adoretus (Adoretus) limbatus</i> Blanchard, 1850		IN: BH, CH, HR, JK, MP, MH, OD, UP, WB E: BD, MM, TH	Löbl and Smetana (2006)
Tribe: Anomalini				
Subtribe: Anomalina Streubel, 1839				
5	Genus Anomala Samouelle, 1819 <i>Anomala rufiventris</i> Kollar & Redtenbacher, 1848	India: Jammu and Kashmir, Ramban, Rampur, 4494.8ft., 33.2206050N, 75.2107535E, 13.viii.2022, (2♀), leg. Irtiza Wani. India: Jammu and Kashmir Poonch, Surankote, 33.6928910N, 74.237860E, 01.viii.2022, (5♂), leg. Irtiza Wani	IN: HP, JK, SK, AS, HR, MN, ML, UP, WB E: NP, CN, VN, BT	Löbl and Smetana (2006)
6	<i>Anomala dorsalis</i> (Fabricius, 1775)		IN: HP, JK, Sk, UK, AN, AP, AS, BH, CH, GJ, HR, KR, KL, MP, MN, , PB, RJ, TN, UP, WB E: NP, PK, BD	Schoolmeesters (2023).
7	<i>Anomala dimidiata barbata</i> Burmeister, 1855		IN: HP, JK, UK E: AF, PK	Löbl and Smetana (2006)
Genus: Callistethus Blanchard, 1851				

S. N.	Name of the species	Material examined	Distribution in India.	References
8	<i>Callistethus auronitens</i> (Hope, 1835)		IN: HP, JK, SK, UK; E: BT, CN, LA, MM, VN, NP	Löbl and Smetana (2016)
9	<i>Callistethus stoliczkae</i> (Sharp, 1878)		IN: HP, JK, SK, PB, UP, WB E: BT, CN, NP, PK.	Löbl and Smetana (2016)
Genus <i>Mimela</i> Kirby, 1825				
10	<i>Mimela passerinii passerinii</i> Hope, 1842	India: Jammu and Kashmir, Anantnag, Pahalgam, Aru Valley, 7919.9ft, 34.0859336N, 75.2638140E, 20.vii.2022, (1♂), leg. Irtiza Wani.	IN: HP, JK, ML, SK, UK, AR E: CN, NP, PK, BT	Löbl and Smetana (2016)
11	<i>Mimela horsfieldi</i> Hope, 1836		IN: AR, AS, HR, HP, JK, ML, PB, SK, UK, WB. E: NP, PK, TB, CN	Löbl and Smetana (2016)
Subtribe: Popilliina Ohaus, 1902				
Genus <i>Popillia</i> Serville, 1825				
12	Genus <i>Popillia</i> Serville, 1825 <i>Popillia cyanea</i> Hope, 1831	India: Jammu and Kashmir Udhampur city, 15.ix.1964, leg. Raj Tilak	IN: AR, AS, JK, ML, SK, UK, WB E: CN, NP	Arrow (1917)
13	<i>Popillia cupricollis</i> Hope, 1831		IN: AR, AS, HP, JK, PB, SK, ML, HR, PB, UP, SK, UK E: NP.	Arrow (1917) Löbl and Smetana (2016)
14	<i>Popillia clypealis</i> Ohaus, 1897		IN: JK, UK, AS, PB	Arrow (1917) Löbl and Smetana, (2016)
15	<i>Popillia sulcata</i> Kollar & Redtenbacher, 1848		IN: JK, UK. E: CN, NP.	Arrow (1917)
Subtribe: Anisopliina Burmeister, 1844				
Genus: <i>Tropiorhynchus</i> Blanchard, 1851				
16	<i>Tropiorhynchus podagricus</i> (Burmeister, 1844)		IN: MH, JK	Arrow (1917) Gupta (2017)
Genus: <i>Rhinyptia</i> Burmeister, 1844				
17	<i>Rhinyptia (Rhinyptia) suturalis</i> Kraatz, 1895		IN: JK, PB; E: AF, PK, IR	Löbl and Smetana (2016)

Abbreviations: IN: India, E: Elsewhere AP: Andhra Pradesh, AR: Arunachal Pradesh, AS: Assam, BR: Bihar, CH: Chhattisgarh, HR: Haryana, HP: Himachal Pradesh, JK: Jammu and Kashmir, KL: Kerala, MP: Madhya Pradesh, MH: Maharashtra, MN: Manipur, ML: Meghalaya, PB: Punjab, UK: Uttarakhand, UP: Uttar Pradesh, WB: West Bengal,

AN: Andaman and Nicobar Islands, GJ: Gujarat, SK: Sikkim, AF: Afghanistan, CN: China, BT: Bhutan, FJ: Fiji, IR: Iran, VN: Vietnam, TB: Tibet, MM: Myanmar, LA: Laos, BD: Bangladesh, TH: Thailand, KZ: Kazakhstan, ID: Indonesia, MY: Malaysia, MD: Madagascar.

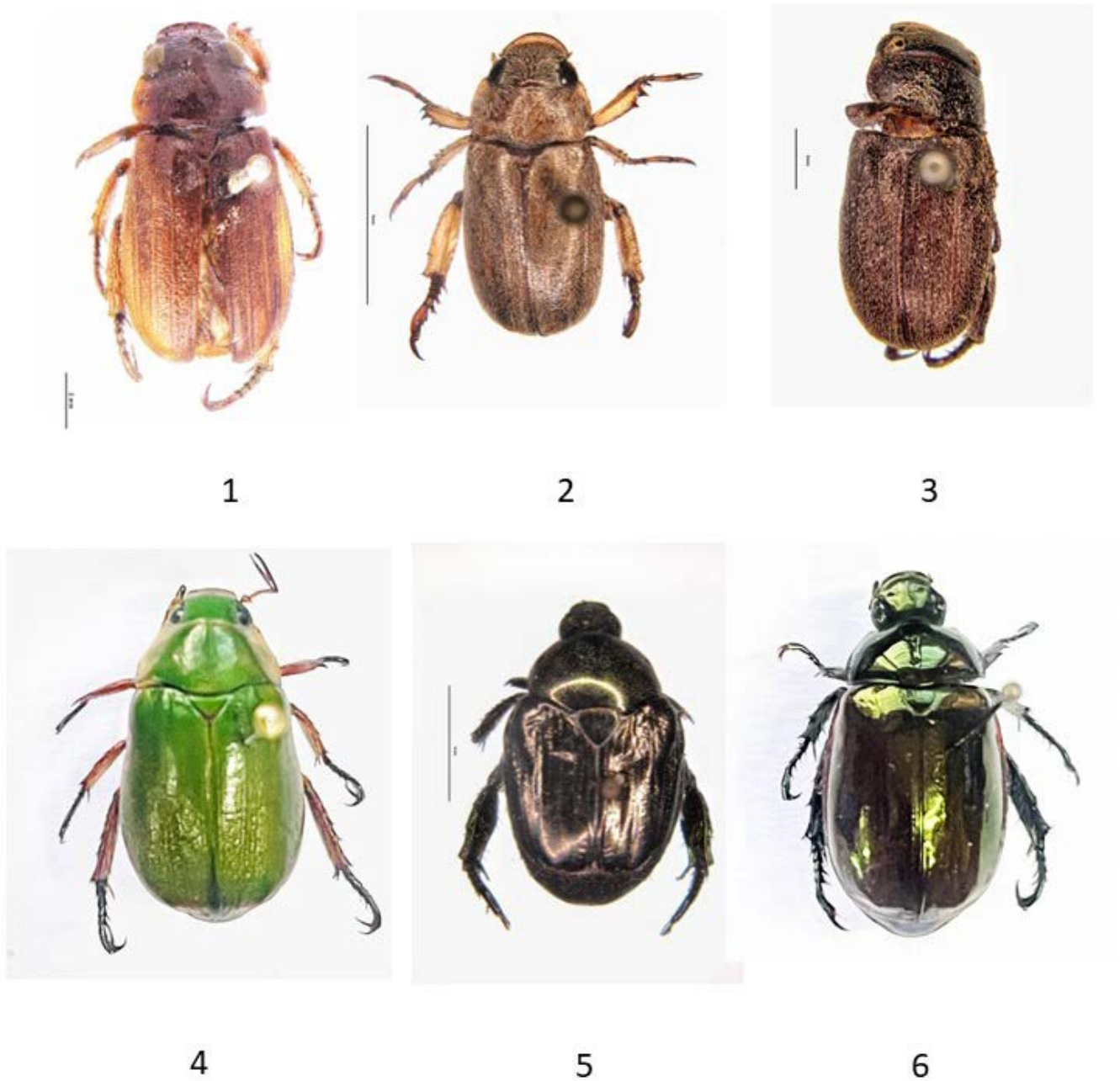


Fig (1-4) 1. *Adoretus (Adoretus) versutus* Harold, 1869 2. *Adoretus simplex* Sharp, 1878
3. *Adoretus (Adoretus) duvauceli* Blanchard, 1851 4. *Mimela passerinii passerinii* Hope, 1842 5. *Popillia cyanea* Hope, 1831 6. *Anomala rufiventris* Kollar & Redtenbacher, 1848

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